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February 3, 1994

Mr. Jeff Dodd
Removal Enforcement Section (3HW33)
U.S. Environmental Protection Agency
Power Technology Center, Suite 200
201 Defense Highway
Annapolis, MD 21401

Subject: Report on Graphics Depicting Iso-Concentrations of Soil Contamination at the Metcoa Restart Site, Pulaski, Pennsylvania
Work Assignment No. C03148
Contract No. 68-W9-0005

Dear Mr. Dodd:

As requested by EPA, Michael Heffron, Dynamac Corporation, and Mrinal Biswas, PRC Environmental Management, Inc. (PRC), have prepared a two sets of maps that identify the locations and concentrations of cadmium, nickel, lead, and thorium in soils at the Metcoa Restart site. A map showing the radiation levels in micro Roentgens per hour (μR/hr) at a level of one centimeter above the ground and a base map also have been prepared. The coordinates and the concentrations of cadmium, nickel, lead, and thorium were taken from Work Plan No. 2, Management Option and Analysis Report, Metcoa Restart Site, Pulaski, PA, dated May 1992 and from the analytical data resulting from the soil sampling conducted by PRC at the site on November 18 and 19, 1993.

There is a separate mylar overlay depicting the soil concentration of the contaminant of concern, as well as a three dimensional plot of each contaminant. The mylar overlays are set up in the same scale as the base map in order to have an accurate depiction of the site conditions.

Attached is a brief report explaining the plotted iso-concentration maps for the contaminants of concern.

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If you have any questions or concerns, please do not hesitate contact me at (610) 989-9400.

Sincerely,

Michael Heffron
Project Manager

cc: Donna McGowan, U.S. EPA Region III CERCLA RPO
Cathline Root, U.S. ERA Region III Regional Council
Robert Stecik, Jr., Dynamac TES VIII Program Manager
Mrinal Biswas, PRC Work Assignment Manager

GRAPHICS REPORT
THE METCOA RESTART SITE
PULASKI, PENNSYLVANIA

Contract No. 68-W9-0005 (TES VIII)
Work Assignment No. C03148
Project No. P586-C01

Prepared For:
Mr. Jeff Dodd
U.S. Environmental Protection Agency. Region III
841 Chestnut Street
Philadelphia, Pennsylvania 19107
January 25, 1994

Prepared By:
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Prepared By:

Michael Heffron
Project Manager

Reviewed By:

Charles Hale
Program Manager

AR101423

1.0 AUTHORIZATION

Dynamac and its subcontractor PRC Environmental Management, Inc. performed this work under EPA Contract No. 68-W9-0005 (TES VIII), Work Assignment No. C03148 for the Metcoa Restart Site.

2.0 OBJECTIVES

The objective of this task was to prepare separate maps depicting the soil concentrations of cadmium, lead, nickel, and thorium at the Metcoa Restart Site. An additional map depicting the results of a radiological survey was also requested by EPA. A base map of the site layout was produced with a Computer Aided Drafting (CAD) Program, and the mylar overlays depicting iso-concentrations were prepared with a computer program called Surfer™.

3.0 DESCRIPTION OF GRAPHIC PRODUCTION

All the graphics were produced with a software package known as SURFER, a Golden Software, Inc. product. The SURFER Program is comprised of three separate programs: GRID, TOPO, and SURF, each of which is explained below. It is important to note that this computer program, while accurate, interprets the available data and interpolates the contours based upon the surrounding data points. The SURFER program is an excellent tool for producing representative contours, but should be viewed with a certain latitude. For example, the soil concentration contours may depict an area to be within the 100 ppm soil concentration of cadmium based on the surrounding data, but there was never actually a sample taken at that exact point to confirm the contour. If the soil is extremely heterogenous and the contaminants were not uniformly distributed over that area, the contours may be misleading. The program was used on this site to identify and depict the areas of elevated soil contamination based on the available data, and has accurately portrayed these areas. The contour maps provide a "blueprint" which can be used to concentrate the removal activities at the site.

The GRID Program is the program into which the basic information is entered and from which the other two programs (TOPO and SURF) obtain the data to plot. The coordinates of each sample location were entered as the x coordinate being from west to east, and the y coordinate being south to north. The z coordinate, which produces the contours, was the contaminant concentration. The coordinate information and the analytical results were obtained from Work Plan No. 2, Management and Analysis Report, Metcoa Restart Site, Pulaski, PA, dated May 1992, and from the analytical data from the soil samples collected by PRC on November 18, 19, 1993. The GRID Program interprets the data points such that the influence of one data point on another declines with distance from the point being estimated. Each point or intersection of row and column, searches the 10 nearest points to aid in plotting the data.

The "gridded" data from the GRID Program was entered into the TOPO program. TOPO is a contouring program that creates contour maps. The contour map is a plot of three values of which the first two are (x,y) coordinates, and the third (z) is defined by lines of equal values of contaminant concentrations. The actual sample locations are also plotted with the corresponding

contaminant concentration.

The three dimensional figures were created by entering the "gridded" data into the SURF Program. The SURF Program produced perspective block diagrams rotated 225° horizontally and the view plane was tilted at an angle of 30°. These positions allow the best perspective of the plotted data. The actual sample locations are also plotted with the corresponding contaminant concentration. The three dimensional plots are helpful in quickly determining the areas of elevated concentrations.

As mentioned earlier, all the coordinate and data were obtained from Work Plan No. 2, Management and Analysis Report, Metcoa Restart Site, Pulaski, PA, dated May 1992, and from the analytical data from the soil samples collected by PRC on November 18, 19, 1993. A variety of samples were collected at depths from 0 to 0.5 feet below ground surface (bgs) to 1.0 to 3 feet bgs, and 3.0 to 5.0 feet bgs. While the majority of the higher concentrations were concentrated in the 0 to 0.5 foot bgs range, the depth interval with the highest concentration was used to create the plots.

The following sections provide descriptions of each map, including the contour intervals used, and the highest concentration locations.

4.0 DISCUSSION OF INDIVIDUAL MAPS

Base Map

The base map has been produced with a Computer Aided Drafting (CAD) program at a scale of one inch to 25 meters. The southwest corner of the map is located at grid node 250 E, 175 N, and the northeast corner is located at grid node 525 E, 500 N.

The iso-concentration contour maps are drawn on transparent mylar at a scale of one inch to 25 meters. The mylar overlays have the same grid nodes as corners as the CAD basemap in order to have accurate overlays of the soil concentrations over the site.

Map for Radiological Survey

From August 5 through August 11, 1991, a radiological survey of the site was conducted by the potentially responsible party (PRP). Measurements were taken of radiation levels in micro Roentgens per hour (μR/hr) at levels of both one meter and one centimeter above the ground at all grid nodes, fixed earlier. Among several hundred measurements of radiation levels taken earlier, 215 readings equal to or higher than 8 μR/hr have been plotted. The contour interval

for the Radiological Survey is 10 μR/hr. The concentric contours depicting the higher concentrations are located at or around the grid location of 390 E, 452 N.

Map for Concentrations of Cadmium in Soil

The proposed action level for cadmium is 1307 milligrams per kilogram (mg/kg) for the soil at the site. The minimum contour for the plotted map is 807 mg/kg, and the contour interval is 500 mg/kg. The highest concentration of cadmium is 5,370 mg/kg, and is located at grid node 310 E, 350 N.

Map for Concentrations of Nickel in Soil

The proposed action level for the concentration of nickel in soil at the site is 18,554 mg/kg. The minimum and maximum contours for the map are 3,554 mg/kg and 68,000 mg/kg, respectively, and the contour interval is 5,000 mg/kg. The highest concentration of nickel is 67,800 mg/kg and is located at grid node 318 E, 428 N.

Map for Concentrations of Lead in Soil

The proposed action level for the concentration of lead in soil at the site is 500 mg/kg. The minimum and maximum contours for the map are 100 mg/kg and 2,100 mg/kg, respectively, and the contour interval is 100 mg/kg. The highest concentration of lead is 2,190 mg/kg and is located at grid node 355 E, 450 N.

Map for Concentrations of Thorium in Soil

The proposed action level for the concentration of thorium in soil at the site is 10 Pico Courie per gram (pCi/gm). The minimum and maximum contours for the map are 5 pCi/gm and 300 pCi/gm, respectively, and the contour interval is 10 pCi/gm. The highest concentration of thorium is 315 pCi/gm and is located at grid node 365 E, 457 N.